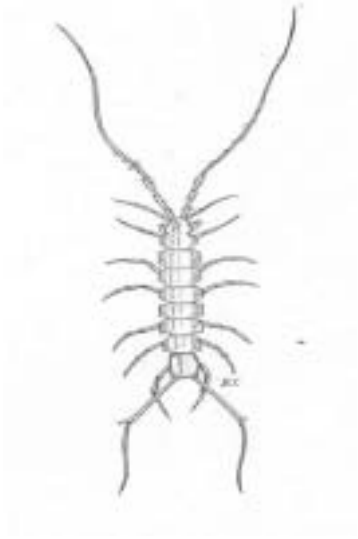
Conservation Assessment
for
Stillhouse Cave Isopod (Caecidotea simonini)



(Franz and Slifer, 1971)

USDA Forest Service, Eastern Region

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This Conservation Assessment was prepared to compile the published and unpublished information on Caecidotea simonini. It does not represent a management decision by the U.S. Forest Service. Though the best scientific information available was used and subject experts were consulted in preparation of this document, it is expected that new information will arise. In the spirit of continuous learning and adaptive management, if you have information that will assist in conserving the subject community and associated taxa, please contact the Eastern Region of the Forest Service Threatened and Endangered Species Program at 310 Wisconsin Avenue, Milwaukee, Wisconsin 53203.

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EXECUTIVE SUMMARY

Stillhouse cave isopod is designated as a Regional Forester Sensitive Species on the Monongahela National Forest in the Eastern Region of the Forest Service. The purpose of this document is to provide the background information necessary to prepare a Conservation Strategy, which will include management actions to conserve the species.

Caecidotea simonini is a cave isopod known only from a single locality in Randolph County, West Virginia and is thus extremely vulnerable to any form of groundwater degradation.

NOMENCLATURE AND TAXONOMY

Classification: Class Crustacea
Order Isopoda
Family Asellidae

Scientific Name: Caecidotea simonini

Common Name: Stillhouse cave isopod

Synonyms: Asellus (baicalasellus) simonini
Asellus simonini
Conasellus simonini
Pseudobaicalasellus simonini

This species was described by Bresson (1955) as Asellus simonini. Bresson placed the species in the subgenus Baicalasellus due to the unusual morphology of the male second pleopod, which resembled species in Lake Baikal more than North American species. Henry and Magniez (1970) erected the new genus Pseudobaicalasellus for three Appalachian subterranean isopods and placed Pseudobaicalasellus simonini in their new genus. Holsinger and Steeves (1971) rejected Pseudobaicalasellus and retained Asellus. Fleming (1973) synonymized Pseudobaicalasellus with Asellus. Lewis (1980) compared Pseudobaicalasellus with Caecidotea (the latter genus), but followed Bowman (1975) in placing the North American asellids in Caecidotea rather than Conasellus or Asellus.

DESCRIPTION OF SPECIES

Caecidotea simonini is an unpigmented (white), eyeless isopod crustacean that reaches a reported length of 6.6mm (Bresson, 1955). It is typical of the members of the Cannulus Group in having the male second pleopod endopodite tip consisting of a single slender process. Identification of this species requires laboratory dissection and examination of slide-mounted appendages under a compound microscope by a specialist in isopod taxonomy.

LIFE HISTORY

Nothing is know of the life history of Caecidotea simonini

HABITAT

This cave species was reported by Holsinger, et. al. (1976) as occurring under stones in pools.

DISTRIBUTION AND ABUNDANCE

This species is known only from the type-locality, Stillhouse Cave, Randolph Co., West Virginia (Bresson, 1955). It is reported to be common there (Holsinger, et. al., 1976).

POPULATION BIOLOGY AND VIABILITY

Global Rank: G1 critically imperiled; The global rank of G1 is assigned to species that are known from between 1-5 localities. Caecidotea simonini is known only from Stillhouse Cave.

West Virginia State Rank: S1 critically imperiled; The state rank of S1 is similarly assigned to species that are known from between 1-5 localities.

POTENTIAL THREATS

Due to the presence of Caecidotea simonini in the restricted cave environment, it is susceptible to a wide variety of disturbances (Elliott, 1998). Caves are underground drainage conduits for surface runoff, bringing in significant quantities of nutrients for cave communities. Unfortunately, contaminants may be introduced with equal ease, with devastating effects on cave animals. Potential contaminants include (1) sewage or fecal contamination, including sewage plant effluent, septic field waste, campground outhouses, feedlots, grazing pastures or any other source of human or animal waste (Harvey and Skeleton; Quinlan and Rowe, 1977, 1978; Lewis, 1993; Panno, et al 1996, 1997, 1998); (2) pesticides or herbicides used for crops, livestock, trails, roads or other applications; fertilizers used for crops or lawns (Keith and Poulson, 1981; Panno, et al. 1998); (3) hazardous material introductions via accidental spills or deliberate dumping, including road salting (Quinlan and Rowe, 1977, 1978; Lewis, 1993, 1996).

Habitat alteration due to sedimentation is a pervasive threat potentially caused by logging, road or other construction, trail building, farming, or any other kind of development that disturbs groundcover. Sedimentation potentially changes cave habitat, blocks recharge sites, or alters flow volume and velocity. Keith (1988) reported that pesticides and other harmful compounds like PCB's can adhere to clay and silt particles and be transported via sedimentation.

Impoundments may detrimentally affect cave species. Flooding makes terrestrial habitats unusable and creates changes in stream flow that in turn causes siltation and drastic modification of gravel riffle and pool habitats. Stream back-flooding is also another potential source of introduction of contaminants to cave ecosystems (Duchon and Lisowski, 1980; Keith, 1988).

Smoke is another potential source of airborne particulate contamination and hazardous material introduction to the cave environment. Many caves have active air currents that serve to inhale surface air from one entrance and exhale it from another. Potential smoke sources include campfires built in cave entrances, prescribed burns or trash disposal. Concerning the latter, not only may hazardous chemicals be carried into the cave environment, but the residue serves as another source of groundwater contamination.

Numerous caves have been affected by quarry activities prior to acquisition. Roadcut construction for highways passing through national forest land is a similar blasting activity and has the potential to destroy or seriously modify cave ecosystems. Indirect effects of blasting include potential destabilization of passages, collapse and destruction of stream passages, changes in water table levels and sediment transport (Keith, 1988).

Oil, gas or water exploration and development may encounter cave passages and introduce drilling mud and fluids into cave passages and streams. Brine produced by wells is extremely toxic, containing high concentrations of dissolved heavy metals, halides or hydrogen sulfide. These substances can enter cave ecosystems through breach of drilling pits, corrosion of inactive well casings, or during injection to increase production of adjacent wells (Quinlan and Rowe, 1978).

Cave ecosystems are unfortunately not immune to the introduction of exotic species. Out-competition of native cavernicoles by exotic facultative cavernicoles is becoming more common, with species such as the exotic milliped Oxidus gracilis affecting both terrestrial and aquatic habitats.

With the presence of humans in caves comes an increased risk of vandalism or littering of the habitat, disruption of habitat and trampling of fauna, introduction of microbial flora non-native to the cave or introduction of hazardous materials (e.g., spent carbide, batteries). The construction of roads or trails near cave entrances encourages entry.

SUMMARY OF LAND OWNERSHIP AND EXISTING HABITT PROTECTION

The one known locality of Caecidotea simonini lies within the Monongahela National Forest.

SUMMARY OF MANAGEMENT AND CONSERVATION ACTIVITIES

No species specific management activities are being conducted concerning Caecidotea simonini.

The existing (1985) Monongahela Land and Resource Management Plan does not provide management direction for caves although they are being considered in the Forest Plan revision currently underway. A Forest Plan Amendment in progress for Threatened and Endangered Species will include management for the caves on the forest.

RESEARCH AND MONITORING

No species specific research or monitoring activities are being conducted concerning Caecidotea simonini.

RECOMMENDATIONS

Retain on list of Regional Forester Sensitive Species.

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